

Germanium PNP Transistor

2N1159

80V / 5A

DATASHEET

OEM – Delco

Source: Delco Power Transistors 1958

DELCO RADIO DIVISION

GENERAL MOTORS CORPORATION

KOKOMO, INDIANA

2N1159

POWER TRANSISTOR

ENGINEERING DATA SHEET

March 15, 1959

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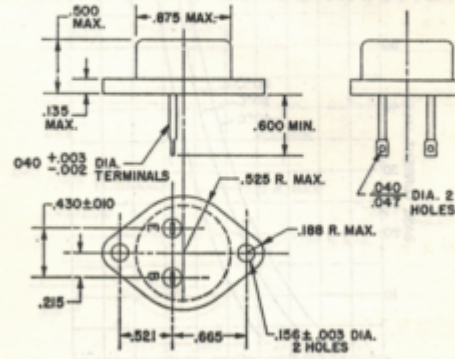
GENERAL DESCRIPTION

The Delco Radio Type 2N1159 is a PNP germanium power transistor designed for general use in switching applications. It is characterized by a maximum emitter current of 5 amperes, a maximum collector diode voltage of 80 volts and a thermal resistance below 1.2°C/Watt. The maximum power dissipation at a mounting base temperature of 71°C is 20 watts.

The case of the 2N1159 is electrically connected to the collector.

The Delco 2N1159 transistors will be supplied either in single units or in matched pairs.

DIMENSIONS AND CONNECTIONS



UPON REQUEST TRANSISTORS WILL BE SUPPLIED WITH 7/16" STRAIGHT PINS WITHOUT SPADE LUGS.

ABSOLUTE MAXIMUM RATINGS

Collector diode voltage V_{CB} ($V_{EB} = -1.5$ volts)	80 volts	Maximum junction temperature	
Emitter diode voltage V_{EB0}	20 volts	Continuous	95°C
Emitter current (continuous)*	5 amp.	Intermittent	100°C
Base current (continuous)*	1 amp.	Minimum junction temperature	-65°C
		Lead temperature, 1/16" ± 1/32" from case for 2 seconds	245°C

*This is the maximum current which can be carried safely by the leads.

ELECTRICAL CHARACTERISTICS

T = 25°C unless otherwise specified

	Min.	Typical	Max.	
Collector diode current I_{CBO} ($V_{CBO} = -2$ volts)		65		microamp
Collector diode current I_{CBO} ($V_{CBO} = -80$ volts)			8	ma
Emitter diode current I_{EB0} ($V_{EB0} = -20$ volts)			8	ma
Collector diode current I_{CBO} ($V_{CBO} = -80$ volts, 85°C)			20	ma
Current gain h_{FE} ($V_{CE} = -2$ volts, $I_C = 1$ amp)			150	
Current gain h_{FE} ($V_{CE} = -2$ volts, $I_C = 3$ amps)	30		75	
Base voltage V_{BE} ($V_{CE} = -2$ volts, $I_C = 3$ amps)		0.8	1.5	volt
Saturation voltage V_{EC} ($I_B = 200$ ma., $I_C = 3$ amps)		0.7	1	volt
Floating Potential V_{EB0} ($V_{CBO} = -80$ volts, $I_E = 0$)			1	volt
Collector to emitter voltage V_{CBO} ($I_C = 1$ amp., $I_B = 0$)*	-60			volts
Common emitter current amplification cutoff frequency f_{GE} ($I_C = 3$ amps, $V_{EC} = 2$ volts)		10		kes
Rise time ("on" $I_C = 3$ Adc, $I_B = .5$ Adc)		10		microsec
Fall time ("off" $V_{EB} = -6$ volts, $R_{EB} = 10\Omega$)		10		microsec

*In order to avoid excessive heating of the collector junction, perform test with the sweep method.

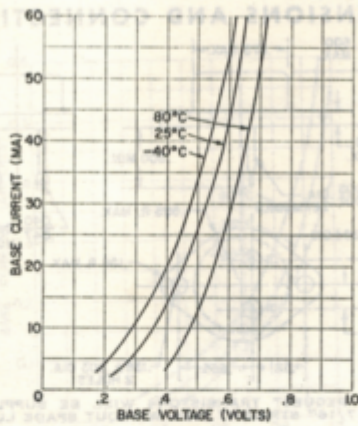
THERMAL CHARACTERISTICS

Thermal resistance from (junction to mounting base)	1.2	°C/watt
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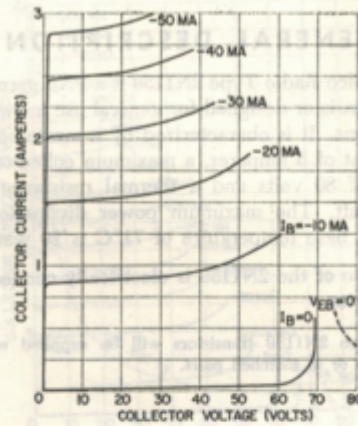
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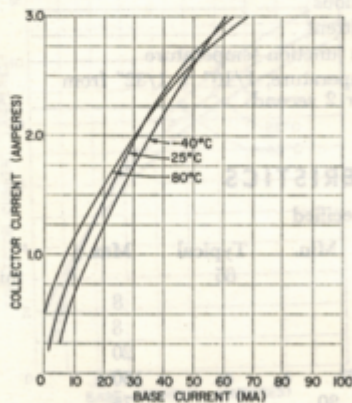
TYPICAL CHARACTERISTICS, COMMON EMITTER



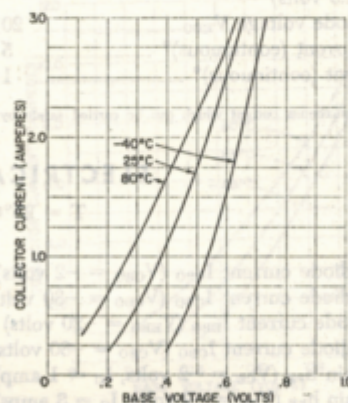
INPUT CHARACTERISTICS



OUTPUT CHARACTERISTICS (25°C.)



CURRENT TRANSFER CHARACTERISTICS



TRANSCONDUCTANCE CHARACTERISTICS

MECHANICAL DATA

The 2N1159 transistor has been designed to pass the following environmental tests: (The numbers refer to paragraphs of MIL-T-19500) Temperature Cycling (4.6.24), Glass Strain (4.6.25), Moisture Resistance (4.6.26), Shock (4.6.28), Vibration, Fatigue (4.6.30), Vibration Noise (4.6.31), Reduced Pressure (15 mm of mercury) (4.6.32) and Salt Spray (4.6.35).